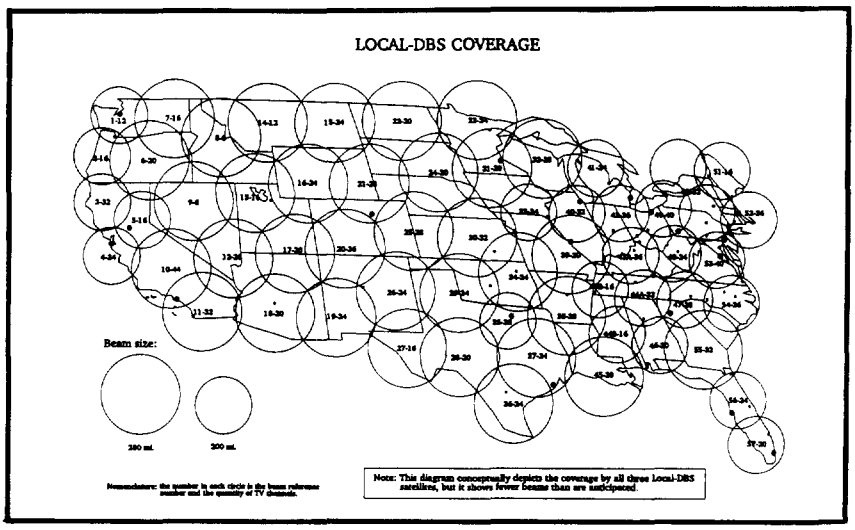
broadcasters. However, he acknowledged that it might be necessary to take the firm public at some point. Taylor plans to retain a 40 percent interest in the company through his other firm, Taylor Communications Corp., and intends to sell the remaining 60 percent to investors.

...An Expedited Announcement

Local-DBS had planned to announce the service later this year when, it hoped, it would have secured space segment and a significant amount of financial backing from local broadcasters, Kremer said.



However, he added, the company has been forced to come forward now because of reports that Advanced Communications, a DBS licensee, plans to announce a regional-based DBS service.

Advanced and Local-DBS, said Kremer, recently broke off negotiations concerning possible use of Advanced's space segment (27 frequencies at 110°W). "It's our idea, and [Advanced Communications Inc.'s President Dan Garner] is trying to run with it," he charged.

Garner told us that, indeed, his company is "seriously contemplating" offering a spot beam service for local broadcasters as part of a larger, full-Conus system. However, he added that the idea has been floated about and advocated by several individuals since the late 1970s and therefore, he could not be accused of appropriating the concept from Local-DBS.

...Will Localism Return as a Force in Broadcasting?

Michael Alpert, president of Alpert and Associates, a Washington D.C.-based consulting firm, praised the concept, saying that it has the potential to reestablish localism as a powerful force in television. Spot-beam DBS, he said, will allow broadcasters to provide specialized programming that interests individuals in a particular area. Increased channel space and addressability, he added, will enable broadcasters "to approach their markets differently" and to offer programming that runs counter to cable fare.

"Local broadcasting will change dramatically over time," he said. If broadcasters do not react to emerging trends, he added, they run the risk of becoming obsolete. Local broadcasters, said Alpert, should arrange their business plans with regard to the movement toward individualized entertainment "rather than burying their heads in the sand."

The entire programming package, rather than the technical advantages of receiving local signals via satellite, will be the service's primary selling point in the eyes of the consumer, said Neil Kohrn, president of Communications Strategists Inc., a consulting firm in Roswell, Ga. Promoters of a regional DBS service will need to emphasize the advantages of purchasing equipment that enables the consumer to receive local programming as an added feature to the attractive array of programming that national DBS proposes to offer, he added.

Kohrn suspects that the national broadcast networks, which currently raise a substantial amount of revenue from local stations they own and operate, will be extremely interested in the service. "They need to do something in the next five or 10 years or, eventually, they will cease to exist."

TECHNOLOGY

Local DBS Not Just Pie-in-the-Sky

By GARY KIM

irect broadcast satellites can't initial base of 2 million households in 1995, and 3 million addi- Industry satellite engineering expert Norman Weinhouse is I- its own orbital assignments. Instead, the company says it has ten 20th markets would pay $11,667. Prices drop further for the 21 to 40

CABLE VISION

OCTOBER 7,1991

New DBS System Planned

Cable may be on the verge of losing one of its trump cards in the competitive battle against DBS. Ed Taylor, founder of Southern Satellite Systems (the progenitor of Tempo Enterprises), says he has developed a technique that will permit satellite-direct delivery of local signals in digital NTSC or whatever HDTV format is ultimately approved by the FCC.

Cable operators have argued that only their technology can provide local tie-ins for viewers. If DBS can do the same thing, and in formats that seem destined for future signal delivery, Taylor may have negated a significant cable advantage. He claims that "no new inventions or unproven technologies are involved in this DBS plan."

The venture, known as LOCAL-DBS Inc., calls for eventual use of three high-power DBS satellites, to be built by Space Systems/LORAL. The first would be launched in 1995.

Local broadcasters would uplink to these satellites, and their signals would be sent back to earth in localized spot beams. These beams would supplement the wider-range signals sent from satellites carrying cable, broadcast and narrow-interest networks.

Taylor and his colleague, cable pioneer Selman Kremer, express confidence that they'll be able to raise the nearly $1 billion necessary to take it to fruition. Their principal sources of funding will be private investors, public issues and the sale of condominium transponders to local broadcast stations. "We have no intention of going through the nonsense that SkyPix has experienced when it comes to raising capital," says Kremer. *•Tom Kerver*

DBS May Offer Ride For Local TV Signals

Broadcasters Could Lease Satellite Beams

By RENEE SAUNDERS
Space News Staff Writer

WASHINGTON — Direct broadcast satellite entrepreneurs hope to entice local television stations to switch from terrestrial cable and deliver their broadcasts to viewers' homes via satellites using concentrated spot beams.

Direct-to-home satellite-delivered entertainment ventures — which have experienced a roller coaster ride of popularity among investors since the early 1980s — are currently in good favor among many satellite and broadcast industry officials.

Tailoring a satellite system to serve local markets is the newest angle in the direct broadcast satellite (DBS) business.

In the United States there are two proposed national DBS services: Skypix Inc. of Kent, Wash., and U.S. Satellite Broadcasting Inc., a subsidiary of Hubbard Broadcasting, Minneapolis. Other ventures, including Primestar of Bala-Cynwyd, Pa., that use a satellite delivery system, do not qualify as DBS because of the larger dish size needed by the subscriber. A DBS system will use a dish measuring no larger than 18 inches, while viewers need a three-foot dish to receive Primestar's programming.

The two true DBS ventures, and several that have failed in the United States, all have concentrated on a national DBS service, ignoring for the most part the local programming element.

Although using satellites to serve local needs is a new concept, the technology that will be used is not, according to Edward Taylor, president and founder of Local-DBS, Tulsa, Okla.

The service proposed by Local-DBS would complement those nationwide systems, he said.

Local-DBS intends to launch three satellites, beginning in 1995, that will cover the contiguous United States and carry local programming to approximately 90 circular regions measuring between 200 miles and 300 miles in diameter.

Each of these 90 regions will be covered by a spot beam that has the capacity to carry 40 television channels, Taylor told *Space News* in an October 8 telephone interview.

The venture is speculative, as the investment required is very large and the company has no money. The project will cost in excess of $1 billion, according to Local-DBS estimates, but no capital has yet been raised.

The system would give the local broadcaster and viewer an option over cable, Taylor said.

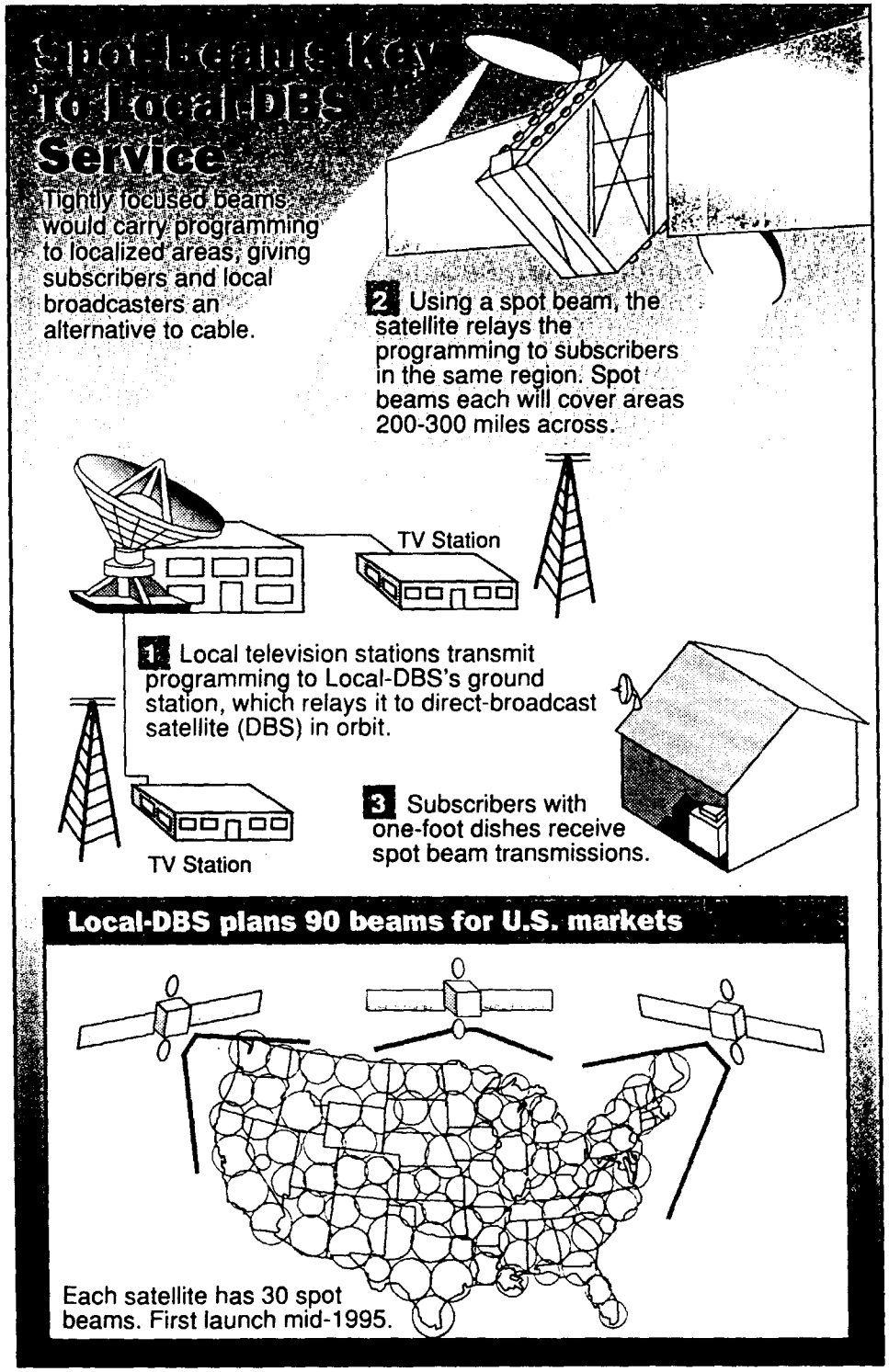
Taylor said the same receiver and home electronics unit that consumers would purchase to receive the U.S. Satellite Broadcasting service would be used for Local-DBS. However, no partnership between the DBS providers is planned. The viewer would have access to both services by paying a total of approximately $50 per month.

A broadcaster would lease a satellite channel for the expected 10-year life of the satellite. The leases would cost as little as $400,000, or as much as $3 million, depending on the type of transmission. Transmitting regular-quality television over the satellite would be cheaper than high-definition television signals, according to Local-DBS estimates.

Space Systems/Loral of Palo Alto, Calif., has been chosen to build the satellites, which are scheduled to be launched at one-year intervals beginning in 1995.

Joseph Tedino, spokesman for Loral,

See DBS, Page 21



Source: Local-DBS Inc

Localized DBS Service Could Carry TV Stations on Spot Beam

DBS, From Page 3

said the company is in discus-

vision stations, Burnell said. The public stock offering is a possibil-

such a satellite-delivered broadcast service, nor has it secured

the offices of Taylor Communications Inc., a consulting firm

closely before forming an official policy, he added.

ATTACHMENT 3

DBS FOR LOCAL BROADCASTING

FROM THE

NAB 1992 BROADCAST ENGINEERING CONFERENCE PROCEEDINGS

DBS FOR LOCAL BROADCASTERS

Norman P. Weinhouse
Local DBS, Inc.
Tulsa, Oklahoma
Bell Canyon, California

Abstract- A satellite system whereby every existing television broadcast station in the U.S. can transmit program(s) to a 200 or 300 mile diameter coverage area is described. Four (or more) NTSC channels or two HDTV channels are transmitted in each satellite transponder, free of the impairments and limitations imposed by traditional terrestrial broadcasting.

The satellite to provide this service is described in detail showing how the narrow beams are formed and how the signals are processed. Frequencies are re-used through geographic isolation allowing a large number of reliable low power transponders on board. Therefore a large number of users can be accommodated.

A companion EIRP budget is given which shows that performance margins are equal to or better than National DBS networks with 230 watt transmitters on board.

Digital source coding and transmission are planned for both NTSC and HDTV channels. Software features will include conditional access, blackout of restricted areas within the beam to avoid duplication of programs, and a variety of data and personal messages to selective receivers.

INTRODUCTION

Did you know that the FCC has set aside 1000 Megahertz for television broadcast? Yes, one whole Gigahertz for broadcasting of television directly to homes. If this speaker was a broadcaster, I would be plenty angry if someone other than a broadcaster were to use that spectrum. The spectrum has been allocated to a satellite service. Internationally it is called the Broadcast Satellite Service (BSS). In the U.S. it is commonly called DBS for Direct Broadcast Satellite, or more properly Direct Broadcast Satellite Service as in Part 100 of the FCC rules. No matter what you call it, it is a Broadcast Service, and it would be tragic if broadcasters as we know them did not use it.

DBS has been perceived as a national kind of service without the localism of broadcasting. Up to now all planning by applicants, licensees, and programmers interested in using this resource has been directed toward serving the entire U.S. with TV programs. Now, the convergence of several technologies has made it possible for localism in satellite broadcasting.

TECHNICAL PARAMETERS OF DBSS

Technical aspects of the Direct Broadcast Satellite Service for the International Telecommunications Union (ITU) Region II, which includes the U.S., are given in the Final Acts of the 1983 World Administrative Radio Council (WARC). The FCC has, with very few caveats, adopted those standards but they have not yet been codified into the rule and regulations.

TABLE 1
SOME TECHNICAL FEATURES OF DBS
IN THE UNITED STATES

PARAMETER	ALLOCATION/STANDARD
1. Orbital Slots (West Longitude)	61.5°, 101°, 110°, 119°, 148°, 157°, & 175°
	This spacing allows extremely small receive dishes from an interference standpoint. Dishes of less than 12 inches in diameter can be

used if the power from the satellite is adequate.

2. Operating Frequency Band — Feeder (UP) Link: 17.3 to 17.8 GHz

a parabolic reflector antenna is displaced from the parabolic axis of revolution, a beam is produced that is squinted from the boresight (axis of revolution). If a single reflector with a multiplicity of feeds is used, a multiplicity of beams are formed. Figure 5

utilize low power amplifiers in the 7 to 15 watt output range as opposed to the National DBS which utilize 120 to 230 watt output amplifiers. The weight and power capacity of the national and local satellites is about the same, and they can share a common bus. Instead of a single common input from the receiving antenna and a single common output to the transmitting antenna, the Local DBS has input and output from individual feed horns. Figure 6 is a partial black diagram of the local DBS.

EIRP COMPARISON NATIONAL AND LOCAL DBS

TABLE 2 - EIRP COMPARISON

PARAMETER	NATIONAL DBS	LOCAL DBS
1. Power Amplifier Output - dBW	+23.6 (230 Watts)	8.8 (7.5 Watts)
2. Output Multiplexer and Feed Line Losses - dB	1.5	1.0
3. Antenna Beamwidth - Degrees	3° x 8°	0.5°
4. Peak Antenna Gain - dB	31 (55% eff)	49 (40% eff)
5. Peak EIRP - dBW	53.1	56.8
6. Geographic Loss - dB	1.0	3.0
7. Edge of Coverage EIRP - dBW	52.1	53.8

The EIRP from the Local DBS is expected to be at least 1.5 dB better than the national service everywhere in the coverage area of both services. It should be noticed that the difference in transmitter power is more than made up by antenna gain. The loss between power amplifier and antenna is less in the Local DBS case since a power division network to a multiplicity of feed horns is not required.

Reliability of the Local DBS should be better than the National Service. Five to 10 watt power amplifiers in satellites have a proven track record of phenomenal reliability. Use of satellite amplifiers of 120 watt and higher has been limited, but the results have been somewhat disappointing. Recent experience has been good however. Use of the low power amplifiers represents very low technical risk.

DIGITAL SOURCE CODING AND TRANSMISSION

The Local DBS system plans to use digital compression for both video and sound because of its spectrum efficiency. Transmission will be digital utilizing a power and spectral efficient technique. Spectrum efficiency is not as important in satellite transmission as is power efficiency. Digital compression in the source coding will allow more television channels in a transponder than might otherwise be possible without compression. Use of QPSK modulation with modest error correction will allow use of extremely small ground receiving antennas.

Even the purest of the purists in the broadcast industry concede that today's technology of compression using 6 to 8 Mb/s on NTSC video produces an acceptable result for broadcast. Proponent HDTV systems are utilizing basic data rates in the range 15 to 20 Mb/s. Almost everyone in the industry believes that a digital system will be selected by the FCC for terrestrial broadcast. Even if the FCC doesn't standardize on a digital system, the satellite industry will adopt one.

Audio

TV associated audio will be sent via some digital compression technology. The most likely candidate is Musicam where monaural audio can be transmitted with true CD quality at 128 kb/s, and left and right audio can be transmitted in 192 kb/s. Musicam is very close to becoming an international standard by a joint ISO and MPEG committee.

NTSC

At least 4 channels of compressed NTSC video will be transmitted in each transponder. The method used will be determined by whatever technology that proves to be best at the time the Local DBS is launched, probably in 1996.

HDTV

Each transponder will be capable of handling 2 HDTV channels. Whatever proponent system is ultimately selected as the standard by the FCC will be used in the Local DBS.

BLACKOUT FEATURES

Consider the case shown in Figure 7. At least 3 TV markets are covered by a single 200 mile spot beam. This will be the case in many urban areas in the U.S. Market integrity will be maintained through software by way of a blackout feature. At least 32 blackout combinations can be accommodated in each channel. Blackout regions can be defined by Postal Zip Codes and/or geographic coordinates. If a satellite station obtains program exclusivity for the entire beam, the coverage area and potential viewers can extend over twice the area of the average B Contour of a full service station. In any case, the satellite signal is not subject to the blockage and multipath so common in terrestrial broadcast. The so-called white areas of fringe reception in some markets will obtain excellent reception. The need for troublesome translators used in many markets will be eliminated.

A farsighted broadcaster might establish a second or third channel for a variety of reasons. Use your imagination. If the program is non-duplicating, the entire 200 or 300 mile area could be served. Selective data services and personal messages can be sent via the conditional access system used.

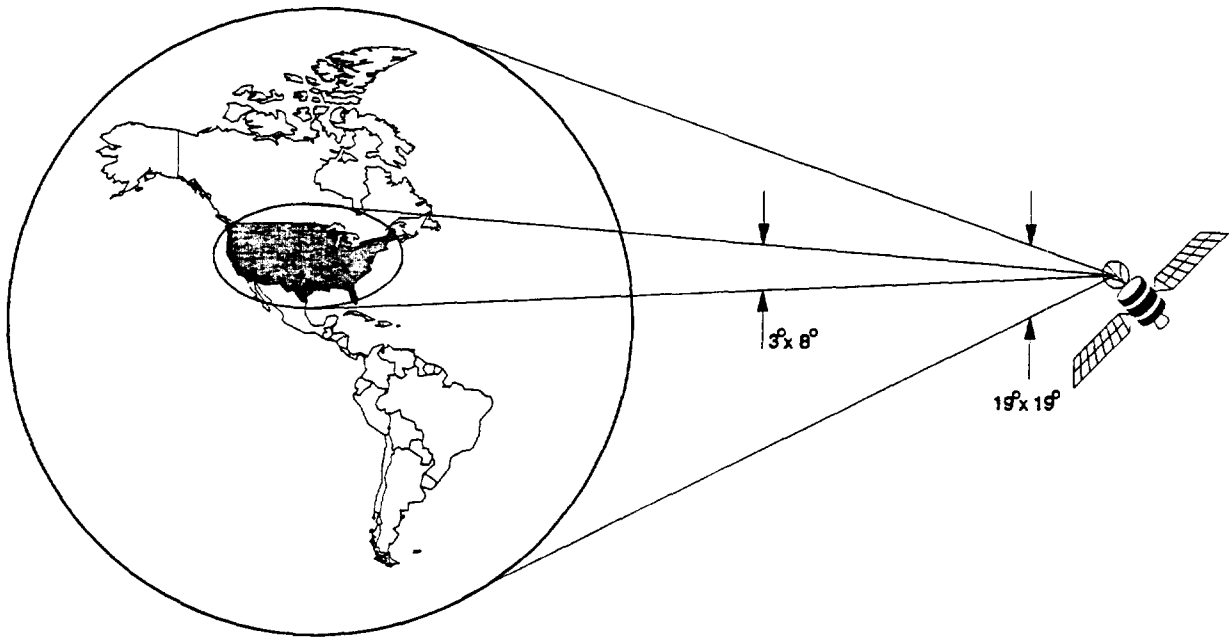
GROUND RECEIVERS

Ground Receivers will be capable of receiving either local or national DBS since they both will use the same technologies of compression and modulation. The upscale models will probably have antennas that can readily be pointed at any orbital slot in its field of view, either mechanically or preferably electronically. Figure 8 shows a block diagram of a DBS receiver, with the desirable features. Current planning calls for HDTV and NTSC digital signals to have about the same symbol rate in a transponder. The NTSC stream to contain a minimum of four TV channels and the HDTV stream to have two TV channels. This will allow commonality in the Demodulator, Demultiplex, and Forward Error Correction circuits as well as the decryption/authorization protocols. The NTSC decompressor can be in either the TV set or in the satellite receiver. For HDTV, the decompressor will be in the TV set.

ACKNOWLEDGEMENTS

The author wishes to thank the NAB and the staff of the Science and Technology Department for the invitation and the opportunity to present this paper. Ed Taylor and Selman Kremer are hereby acknowledged for their entrepreneurial spirit to move forward on this concept. Space Systems/Loral is also thanked for its contributions to this unique satellite system.

FIGURE 1 - GLOBAL AND CONUS COVERAGE FROM SYNCHRONOUS SATELLITES



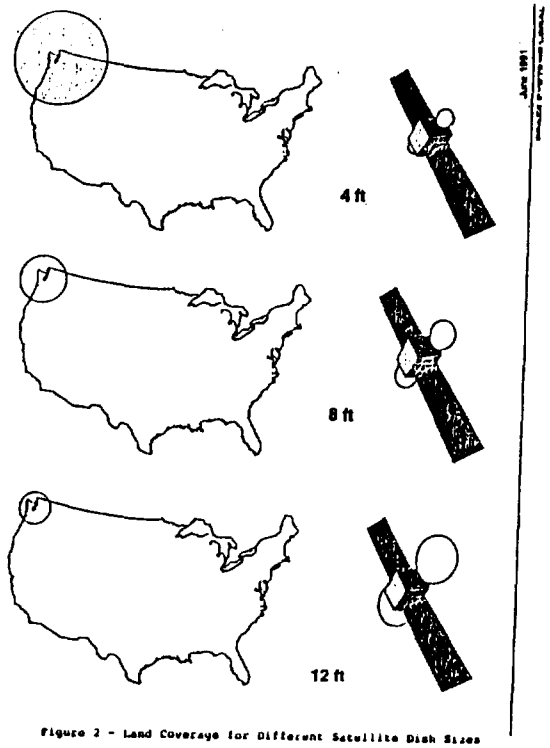
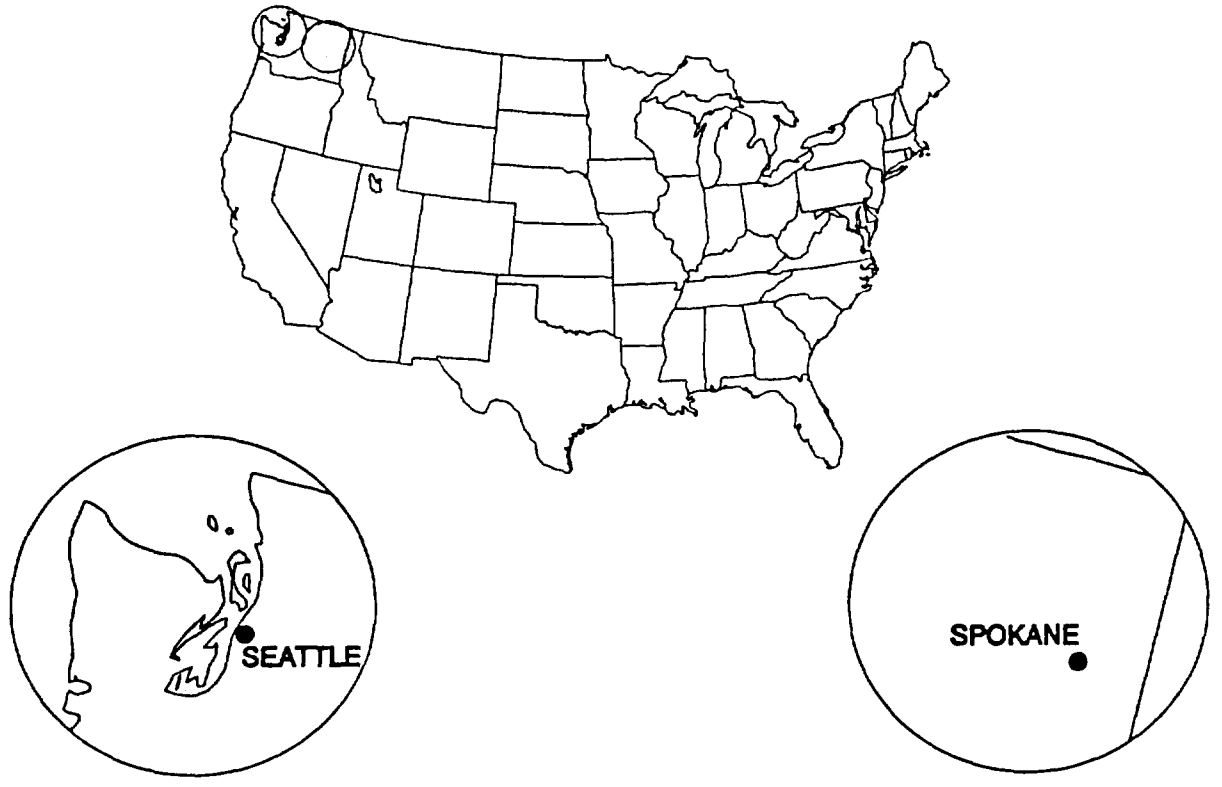


Figure 2 - Land Coverage for Different Satellite Dish Sizes



June 1991

SPACE SYSTEMS/LORAL

Figure 3 - Adjacent 200 Mile Beams

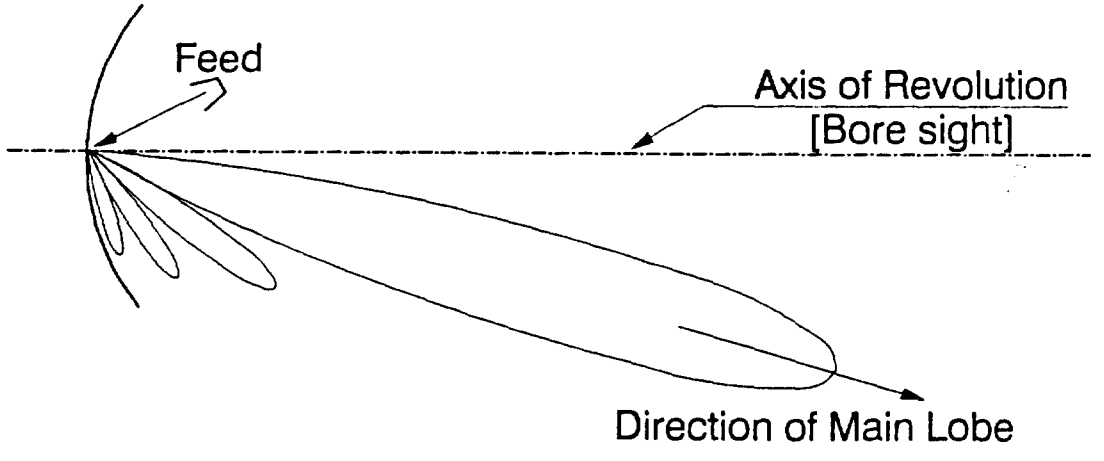
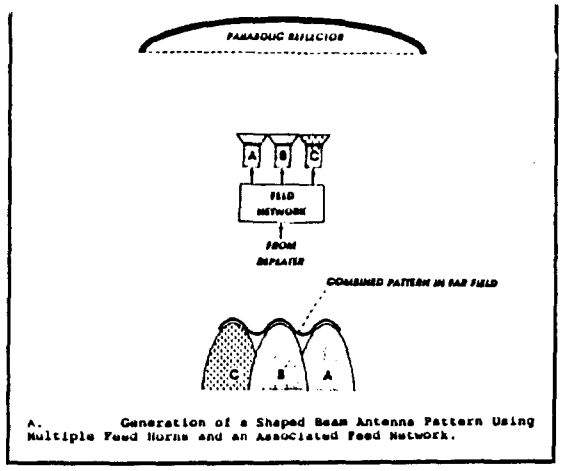
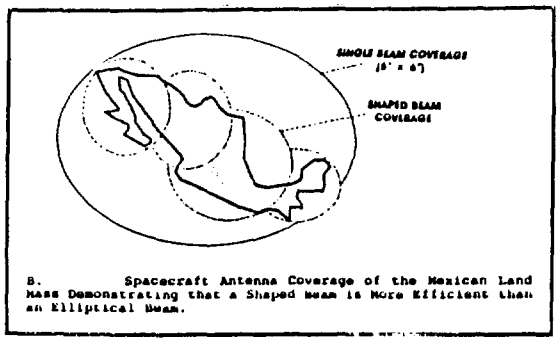


FIGURE 4 - ANTENNA PATTERN WITH FEED OFFSET FROM FOCUS



A. Generation of a Shaped Beam Antenna Pattern Using Multiple Feed Horns and an Associated Feed Network.



B. Spacecraft Antenna Coverage of the Mexican Land Mass Demonstrating that a Shaped Beam is More Efficient than an Elliptical Beam.

Figure 5 - Formation and Application of Shaped Beams

FIGURE 6 - SATELLITE PARTIAL BLOCK DIAGRAM

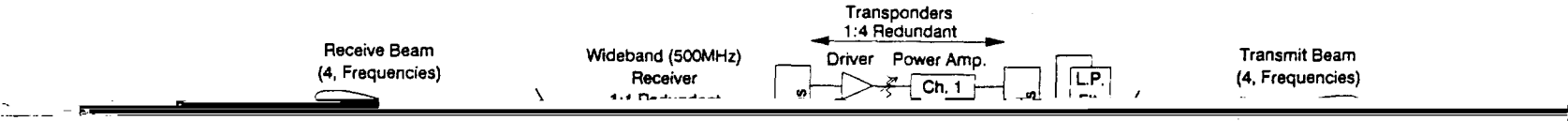


Figure 7

- ELECTRONIC BLANKING with the BEAM
- Washington Local Stations cannot be received in Richmond or Baltimore.

June 1991

SPACE SYSTEMS/LORAL

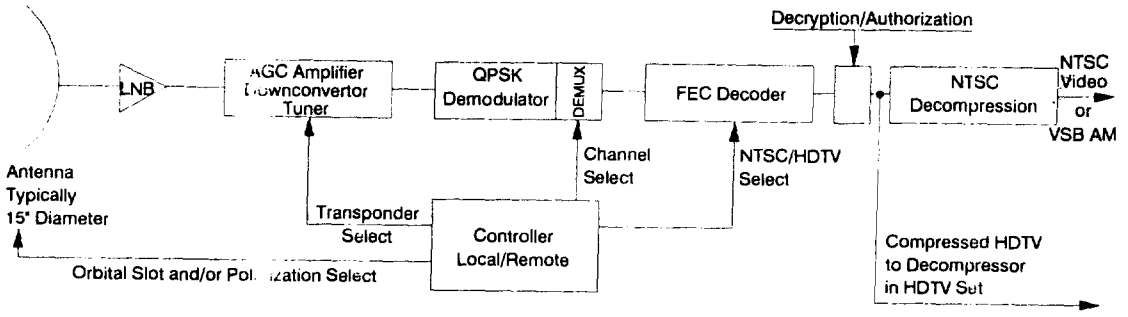


FIGURE 8 - DBS GROUND RECEIVER, BLOCK DIAGRAM

ATTACHMENT 4

LOCAL-DBS: PUTTING HDTV ON A FAST TRACK

FROM THE

1992 NAB HDTV CONVENTION PROCEEDINGS

APRIL 16, 1992

LOCAL-DBS: PUTTING HDTV ON A FAST TRACK

viding the Broadcaster is willing to make the changes his competitors will eventually force him to make anyhow.

We believe this is the time for Broadcasters to increase, not decrease, their control over program delivery. Also, Broadcasters need to show the Networks and Syndicators that TV stations can deliver crystal clear programs, throughout their entire ADI, without the use of Cable or Telco "middlemen".

#3 SLIDE LORAL SATELLITE

A new transmitting tower 22,000 miles up in the sky will allow Broadcasters to literally "rise above" the difficulties that presently exist.

WHAT IS LOCAL-DBS

#4 SLIDE UPLINKING/DOWNLINKING

By combining compression technology and satellite spot beam design, LOCAL-DBS is developing a facility that will allow each Broadcaster to self-deliver locally transmitted TV signals (HDTV or digital NTSC) direct to homes, schools or businesses using spot beams from high-power Direct Broadcast Satellites (DBS) into small dishes. This will allow each TV station in the contiguous USA to deliver one or multiple

APRIL 16, 1992

#6 SLIDE CHICAGO SLIDE

Generally speaking, we intend to share satellites and satellite orbital positions. This means eight to sixteen frequencies in an orbital slot might be devoted to spot beams and the remaining frequencies would be dedicated to full-Conus (contiguous U.S.) services by other providers.

#7 SLIDE MULTIPLE BEAMS OVER USA

What is interesting and intriguing is that prior to digital compression each frequency has occupied a full transponder and each transponder yielded only one TV channel.

#8 SLIDE FREQUENCY REUSE

However, in our spot beam plan each frequency is reused, within certain parameters, over and over again. Thus, each frequency can support ten or more spot beam transponders and each transponder, with compression, can support multiple channels (local TV stations). On a per transponder basis, compression allows us to double the number of channels for HDTV applications or quadruple the number of channels for digital NTSC (DNTSC) applications. Now you understand why one DBS frequency, when repeated in a multiple spot beam application, along with compression, can produce two dozen or more channels or TV stations. In other words, while compression improves efficiency even for full-Conus operations, the benefits of compression are multiplied when combined with spot beam frequency reuse.

#9 SLIDE REPEATS UP/DNLINK #4

The normal size satellite receiving antenna is expected to be

cated the satellite receiver and antenna will cost the consumer around $700 initially. We believe this price will drop to around $300 rather quickly as penetration of DBS picks up.

The only additional item in the receiving equipment that we plan to introduce is a small motor to actuate the DBS receiving antenna so it can rapidly point to any DBS orbital position. This feature may add $50.00 to the cost of the receiving equipment, but it would enable a consumer to access all programming coming from the high-power DBS orbital arc.

The satellites will be operated as condominiums, with each Broadcaster owning its own channel(s) in a beam (or pattern) common to all stations in that locale. These local DBS channel transmissions will be equal to, in received strength, or stronger than the nationally distributed high-power DBS channels. On average, each transponder (one for each frequency use) in LOCAL-DBS spot beams will put out about 17.5 watts. Heavy rainfall areas such as the southeast states require higher wattage transponders to assist in rain attenuation situations.

An encryption system (scrambling for identification and control purposes) is required. Not only do we plan to use the same type reception equipment, as mentioned before, but we also plan to use the same compression standard and the same encryption system adopted by the full-Conus, high-power DBS operators (DirecTv and USSB) who expect to start their services in 1994. Broadcasters can profit from the encryption requirement, if they so desire, by utilizing it as a means to collect reception, subscription and/or programming fees.

Pricing for LOCAL-DBS satellite channels per se cannot be announced until our orbital slots and satellite construction contracts are finalized. However, as a rule of thumb, an HDTV channel should cost in the neighborhood of $2,000,000 to $7,500,000 over the life of the satellite and a digital NTSC channel from $700,000 to $3,000,000. Prices will vary from the highest figures for the largest markets to the lowest figures for the smallest markets.

#10 SLIDE REPEATS LOCAL-DBS #1

APRIL 16, 1992

THE BROADCASTERS' TIME FOR CHANGE IS RUNNING OUT

We believe the Television Broadcasting Industry has but a few years to regain control of its destiny in order to stop Cable from absorbing the functions of both the TV stations and maybe ultimately the Networks.

As we see it, HDTV programming, delivered directly to the

We found that our concept of satellite transmission as supplementary to terrestrial distribution has been accepted by nearly all station principals to whom we have talked. However, due to the transitional economics crunch they face, most every TV station operator wanted us to postpone our satellite launches until at least 1998 and we are complying with this request.

Unfortunately, this long delay will give rise to a service problem for consumers who will begin to buy a million or more HDTV sets per year in 1995. These set owners will have HDTV programs available from VCR's, DirecTv/USSB satellite and from some Cable TV networks at that time, but not from Broad-

#12 SLIDE (GENERAL ASSUMPTION)

1995

CONSUMERS BEGIN TO BUY ONE MILLION

OR MORE HDTV SETS PER YEAR

&

NETWORK HDTV FEEDS BEGIN

****

#13 SLIDE NETWORKS CREATE HDTV DBS FEEDS

(Phases I & II)

1995 NETWORKS TRANSMIT HDTV DBS CHANNELS
(Repeat programming for west coast until hours of HDTV justify second feed.)

1996 N.Y.C. STATIONS TRANSMIT HDTV ON DBS CHANNELS AND TERRESTRIALLY

****

#14 SLIDE NETWORK FEEDS
(Phases III & IV)

1997 SEPARATE WEST COAST HDTV FEEDS BEGIN

1998 **LOCAL-DBS** LAUNCHES FIRST SATELLITE
(Network feeds continue for stations not on LOCAL-DBS spot beam channels.)

(All dates based on LOCAL-DBS estimates of HDTV set sales.)

****

That's how the network feeds work. Now I'll talk more specifically about how those feeds will be used for the benefit of each station's local distribution of HDTV.

#15 SLIDE

O&O or Affiliate remains "in control" as rightful distributor of network HDTV feed

* Public perceives local station as HDTV provider
* Builds station's HDTV viewer base
* The plans eight phases follow

****

#16 SLIDE

LOCAL CONTROL PHASE I -- 1995

* **LOCAL-DBS** VIA O&O AND AFFILIATES MANAGES DELIVERY OF NETWORK DBS FEED TO FULL-CONUS MARKET
* **LOCAL-DBS** MARKETS, BILLS, COLLECTS AND ELECTRONICALLY CONTROLS PAYING DBS USERS
* SUGGESTED RATE IS $2.00 P/HM/CH/M

(Revenue from each DBS user is credited to local affiliate.)

****

#17 SLIDE

LOCAL CONTROL PHASE II -- 1996

* LOCAL STATION INSERTS COMMERCIALS & PASSES NETWORK DOWNLINK FEED TO LOCAL CABLE SYSTEM VIA FIBER LOOP

(Broadcaster now ready and waiting for cable to upgrade. Charges cable $1.00 per sub p/m.)

****

APRIL 16, 1992

#18 SLIDE

LOCAL CONTROL PHASES III & IV

1996 SAME AS II BUT DOWNLINK IS TO CABLE HEAD-ENDS NOT REACHABLE BY FIBER

STATION INSTALLS AUTOMATIC DISK SYSTEM TO INSERT ITS COMMERCIALS

1997 STATION BUYS HDTV TAPE INSERTION EQUIPMENT TO INSERT SYNDICATED PRODUCT INTO CABLE CHANNEL

****

#19 SLIDE

LOCAL CONTROL PHASES V & VI

1998 SOME PHASE IV STATIONS PUT HDTV ON A LOCAL-DBS SPOT BEAM CHANNEL

(Local station's DBS channel replaces network feed on home and cable receivers.)

1999 SOME STATIONS BUILD TERRESTRIAL TOWERS IN LAST YEAR ALLOWED BY FCC

****

#20 SLIDE

LOCAL CONTROL PHASES VII & VIII

2000 CONVERT IN-STUDIO PRODUCTION TO HDTV

2001 CONVERT ENG AND ALL OTHER ASPECTS TO HDTV

(The above dates are averages for major markets. Each station will proceed based on set penetration in its market. Some small market stations will not proceed beyond Phase III.)

****

APRIL 16, 1992

CONCLUSION

The conversion plan I have just outlined would eliminate the threat of Cable, DBS and VCR's stealing the Broadcasters' HDTV thunder. It would also benefit and give equal treatment to small and large market Broadcasters during the five to ten years it will take for the HDTV transition.

****

This is a copy of the presentation delivered at a panel on "HDTV ALTERNATIVE DELIVERY METHODS" during the 1992 NAB HDTV WORLD CONFERENCE held in Las Vegas, Nevada.

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